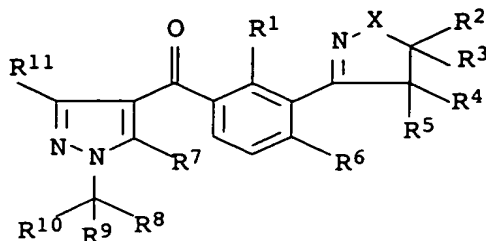


We claim:

1. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula  
I



I

where:

X is O, NH or N(C<sub>1</sub>-C<sub>6</sub>-alkyl);

R<sup>1</sup> is C<sub>1</sub>-C<sub>6</sub>-alkyl;

R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> are hydrogen, C<sub>1</sub>-C<sub>4</sub>-alkyl or C<sub>1</sub>-C<sub>4</sub>-haloalkyl;

R<sup>6</sup> is halogen, nitro, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy, C<sub>1</sub>-C<sub>4</sub>-alkylthio, C<sub>1</sub>-C<sub>4</sub>-haloalkylthio, C<sub>1</sub>-C<sub>4</sub>-alkylsulfonyl or C<sub>1</sub>-C<sub>4</sub>-haloalkylsulfonyl;

R<sup>7</sup> is hydroxyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>3</sub>-C<sub>6</sub>-alkenyloxy, C<sub>1</sub>-C<sub>6</sub>-alkylsulfonyloxy, C<sub>1</sub>-C<sub>6</sub>-alkylcarbonyloxy, C<sub>1</sub>-C<sub>4</sub>-(alkylthio)carbonyloxy, phenylsulfonyloxy or phenylcarbonyloxy, where the phenyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following groups:  
nitro, cyano, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>4</sub>-haloalkoxy;

R<sup>8</sup>, R<sup>9</sup> are C<sub>1</sub>-C<sub>4</sub>-alkyl;

R<sup>10</sup> is hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl;  
where the number of the carbon atoms of the radicals R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> together is at most 7,

R<sup>11</sup> is hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl;

and its agriculturally useful salts.

2. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

X is O;

R<sup>1</sup> is C<sub>1</sub>-C<sub>4</sub>-alkyl;

R<sup>6</sup> is C<sub>1</sub>-C<sub>4</sub>-alkylthio or C<sub>1</sub>-C<sub>4</sub>-alkylsulfonyl.

3. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

X is O;

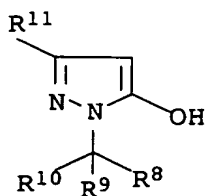
R<sup>1</sup> is C<sub>1</sub>-C<sub>4</sub>-alkyl;

R<sup>6</sup> is halogen, nitro, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>4</sub>-haloalkoxy.

4. A 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I as claimed in claim 1 where

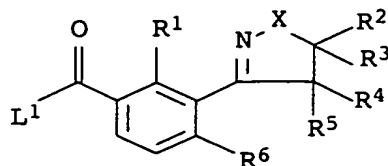
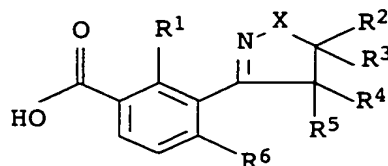
X is N(C<sub>1</sub>-C<sub>6</sub>-alkyl).

5. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where R<sup>7</sup> = hydroxyl as claimed in claim 1, which comprises acylating a pyrazole of the formula II



II

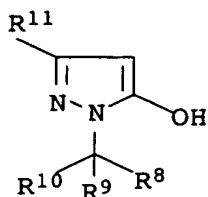
- with an activated benzoic acid III $\alpha$  or a benzoic acid III $\beta$ ,

III $\alpha$ III $\beta$ 

where the variables X, R<sup>1</sup> to R<sup>6</sup> and R<sup>8</sup> to R<sup>11</sup> are as defined in claim 1 and L<sup>1</sup> is a nucleophilically replaceable leaving group and rearranging the acylation product, in the presence

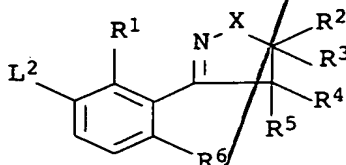
or absence of a catalyst, to give the compounds of the formula I where  $R^7 = \text{hydroxyl}$ .

6. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where  $R^7 = \text{OH}$  as claimed in claim 1, which comprises reacting a pyrazole of the formula II



II

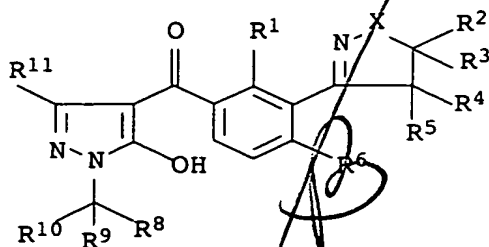
in which the variables  $R^8$  to  $R^{11}$  are as defined in claim 1, or an alkali metal salt thereof, with a 3-(heterocyclyl)benzene derivative of the formula V



V

where the variables  $X$  and  $R^1$  to  $R^6$  are as defined in claim 1 and  $L^2$  is a leaving group in the presence of carbon monoxide, a catalyst and a base.

7. A process for preparing 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I where  $R^7 \neq \text{hydroxyl}$  as claimed in claim 1, which comprises reacting a 3-(heterocyclyl)-substituted benzoylpyrazole I where  $R^7 = \text{hydroxyl}$

I where  $R^7 = \text{OH}$ 

with a compound of the formula VI



VI

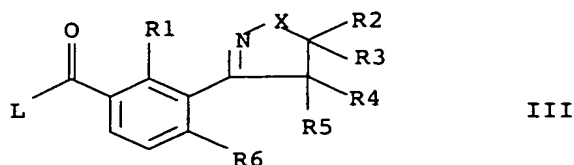
where

- 45  $L^3$  is a nucleophilically replaceable leaving group;

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R<sup>7a</sup> is C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-alkenyl, C<sub>1</sub>-C<sub>6</sub>-alkylsulfonyl, C<sub>1</sub>-C<sub>6</sub>-alkylcarbonyl, C<sub>1</sub>-C<sub>4</sub>-(alkylthio)carbonyloxy, phenylsulfonyl or phenylcarbonyl, where the phenyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following groups:  
nitro, cyano, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>4</sub>-haloalkoxy.

8. A benzoic acid ester of the formula III

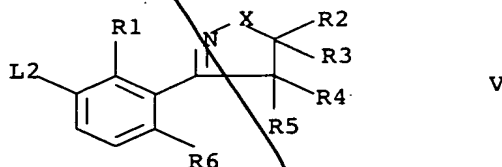


where the variables X, R<sup>1</sup> and R<sup>3</sup> to R<sup>6</sup> are as defined in claim 1 and

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub>-haloalkyl; and

L is hydroxyl or a radical that can be removed by hydrolysis.

9. A 3-(heterocyclyl)benzene derivative of the formula V



where the variables X, R<sup>1</sup> and R<sup>3</sup> to R<sup>6</sup> are as defined in claim 1 and

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub>-haloalkyl; and

L<sup>2</sup> is a nucleophilically displaceable leaving group.

10. A composition, comprising a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as

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claimed in any of claims 1 to 4 and auxiliaries which are customarily used for formulating crop protection agents.

11. A process for preparing compositions as claimed in claim 8,  
5 which comprises mixing a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as claimed in any of claims 1 to 4 and auxiliaries which are customarily used for formulating crop protection agents.

10

12. A method for controlling undesirable vegetation,  
characterized in that a herbicidally effective amount of at least one 3-(heterocyclyl)-substituted benzoylpyrazole of the formula I or an agriculturally useful salt of I as claimed in  
15 any of claims 1 to 4 is allowed to act on the plants, their habitat and/or on seed.

15

13. The use of the 3-(heterocyclyl)-substituted benzoylpyrazoles of the formula I and/or their agriculturally useful salts as  
20 claimed in any of claims 1 to 4 as herbicides.

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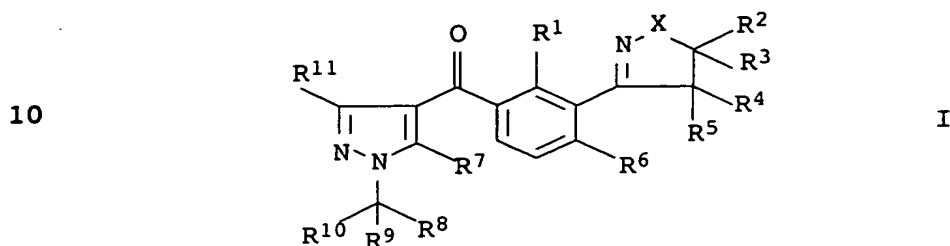
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## 3-(Heterocyclyl)-substituted benzoylpyrazoles

## Abstract

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3-(Heterocyclyl)-substituted benzoylpyrazoles of the formula I



15

where:

X is O, NH or N-alkyl;

20 R<sup>1</sup> is alkyl;R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> are hydrogen, alkyl or haloalkyl;

25 R<sup>6</sup> is halogen, nitro, haloalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio, alkylsulfonyl or haloalkylsulfonyl;

30 R<sup>7</sup> is hydroxyl, alkoxy, alkenyloxy, alkylsulfonyloxy, alkylcarbonyloxy, alkylthiocarbonyloxy, phenylsulfonyloxy or phenylcarbonyloxy, where the phenyl radical may be substituted;

R<sup>8</sup>, R<sup>9</sup> are alkyl;35 R<sup>10</sup> is hydrogen or alkyl;R<sup>11</sup> is hydrogen or alkyl;

and their agriculturally useful salts,

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intermediates and processes for their preparation, and the use of these compounds or of compositions comprising them for controlling undesirable plants are described.

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